

Sample Plan
4/97

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SAMPLING QA/QC WORK PLAN
CORNELL DUBILIER ELECTRONICS
SOUTH PLAINFIELD NEW JERSEY

Prepared by

Superfund Technical Assessment and Response Team
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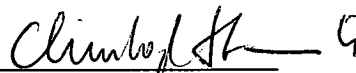
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Edison, New Jersey 08837

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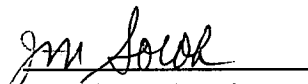
Approved by:

START

for 
Mike Mahnkopf
Project Manager


Date: 4/15/97

START


Joseph M. Soroka
Quality Assurance Officer

Date: 4/14/97

EPA


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Date: 4/15/97

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1.0 BACKGROUND

The Cornell-Dubilier Electronics (CDE) Site is located at 333 Hamilton Boulevard in South Plainfield, Middlesex County, New Jersey (Attachment A, Figure 1). The site is approximately 25 acres in size. Facing Hamilton Boulevard are several buildings currently occupied by approximately 15 businesses. The rear of the property consists of an open field and adjoining wetlands. The facility is currently known as Hamilton Industrial Park.

The site is bordered by Hamilton Boulevard to the north, by Conrail railroad tracks to the east, businesses and residential houses to the north and west and wetlands to the south. An unnamed tributary to Bound Brook traverses the southeast section of the site (Attachment A, Figure 2). A U-shaped hardpack gravel/dirt roadway winds through the site and leads onto Hamilton Boulevard in two places.

CDE was reportedly in operation at the facility from 1956 to 1961. During this period, the company tested transformer oils and allegedly dumped transformer oils containing polychlorinated biphenyls (PCBs) directly onto site soils.

In June and October 1994, the US. EPA conducted sampling under a Site Inspection Prioritization evaluation. Elevated concentrations of PCBs and inorganic constituents were detected in site soils. The highest PCB concentration (1,100 mg/kg) was detected in a sample collected inside the fenced area at a depth of 0 to 6 inches. A sediment sample from the unnamed tributary traversing the southeast section of the site indicated the presence of PCBs at a concentration of 550 mg/kg. Analytical data of on-site surface soil samples collected during this investigation also indicated the presence of volatile and semi-volatile compounds. In April 1996, air sampling was conducted by the Superfund Technical Assessment and Response Team (START). The air samples were collected from the fence-line of the tractor trailer driving school. Although PCBs were not detected, low levels of lead were detected in these samples.

2.0 DATA USE OBJECTIVES

The objective of this sampling event is to identify possible areas of contamination due to offsite migration of site contaminants to the neighboring residential and commercial areas. The analytical results will also be used to evaluate migration pathways and potential threats to public health and safety.

3.0 QUALITY ASSURANCE OBJECTIVES

The overall Quality Assurance (QA) objective for chemical measurement data associated with this sampling event is to provide analytical results that are legally defensible in a court of law. The QA program will incorporate Quality Control (QC) procedures for field sampling, chain of custody, laboratory analyses, and reporting to assure generation of sound analytical results.

The EPA On-Scene Coordinator (OSC) has specified a Level 2 QA objective (QA-2). Details of this QA level are provided in Section 6.0.

The objective of this project/event applies to the following parameters:

Table 1: Quality Assurance Objectives

QA Parameters	Matrix	Intended Use of Data	QA Objective
Polychlorinatedbiphenyl compounds (PCBs)	Soil/Sediment	Removal Action Eligibility	QA-2
Lead, Cadmium	Soil/Sediment	Removal Action Eligibility	QA-2

A Field Sampling Summary is attached in Table 2 and a QA/QC Analysis and Objectives Summary is attached in Table 3.

TABLE 2: FIELD SAMPLING SUMMARY

Analytical Parameters	Matrix	Container Size	Preservative	Holding Time	Subtotal Samples	Rinsate Blankst	Duplicate Samples	MS/MSD Samples	Field Samples
PCBs	Soil	8 oz. glass jars	Cool to 4° C	7 days to extraction, 40 days to analysis	20	NR	1	1	22
Lead, cadmium	Soil	8 oz. glass jars	Cool to 4° C	180 days	20	NR	1	1	22

NR - Not required, dedicated sampling equipment to be used.

TABLE 3:**QA/QC Analysis and Objectives Summary**

Analytical Parameters	Matrix	Analytical Method Reference	QA/QC Quantitation Limits	QA Objective
PCBs	Soil	CLP SOW OLMO3.0 or most current revision	As per method	QA-2
TAL Metals	Soil	CLP SOW ILMO3.2 or most current revision	As per method, analyte specific	QA-2

Note: CLP-format deliverables required for all data packages.

4.0 APPROACH AND SAMPLING METHODOLOGIES

4.1 Sampling Equipment

Surface soil samples will be collected with dedicated trowels in order to minimize cross contamination and decontamination.

4.2 Sampling Design

A maximum of 20 **surface soil samples** will be collected with dedicated scoops and analyzed for lead, cadmium and PCBs. Prior to the sample collection gravel, debris, or foliage will be removed from the sampling point. Samples will be collected from 0-3 inches in depth. Sample locations will be determined by the OSC from residences and other locations off site. All sample locations will be based on existing analytical results and visual observation.

QA/QC samples will include the collection of one field duplicate and one matrix spike/matrix spike duplicate sample for each matrix (soil/sediment, oil and/or liquid) per sampling date at a ratio of 1 per 20 samples. Extra sample volume will be submitted to allow the laboratory to perform matrix spike sample analysis. This analysis provides information about the effect of sample matrix on digestion and measurement methodology. Field duplicate samples provide an indication of analytical variability and analytical error and will not be identified to the laboratory..

This sampling design is based on information currently available and may be modified on site in light of field screening results and other acquired information. All deviations from the sampling plan will be noted in the Sampling Trip Report.

4.3 Standard Operating Procedures (SOPs)

4.3.1 Sample Documentation

All sample documents will be completed legibly, in ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialling the error.

FIELD LOGBOOK

The field logbook is essentially a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed in the writer's absence. All entries will be dated and signed by the individuals making the entries, and should include (at a minimum) the following:

1. Site name and project number.
2. Name(s) of personnel on site.
3. Dates and times of all entries (military time preferred).
4. Descriptions of all site activities, site entry and exit times.

5. Noteworthy events and discussions.
6. Weather conditions.
7. Site observations.
8. Sample and sample location identification and description*.
9. Subcontractor information and names of on-site personnel.
10. Date and time of sample collections, along with chain of custody information.
11. Record of photographs.
12. Site sketches.

* The description of the sample location will be noted in such a manner as to allow the reader to reproduce the location in the field at a later date.

SAMPLE LABELS

Sample labels will clearly identify the particular sample, and should include the following:

1. Site/project number;
2. Sample identification number;
3. Sample collection date and time;
4. Designation of sample (grab or composite);
5. Sample preservation;
6. Analytical parameters; and
7. Name of sampler.

Sample labels will be written in indelible ink and securely affixed to the sample container. Tie-on labels can be used if properly secured.

CHAIN OF CUSTODY RECORD

A chain of custody record will be maintained from the time the sample is taken to its final deposition. Every transfer of custody must be noted and signed for, and a copy of this record kept by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they must be stored in a locked container sealed with a custody seal. Specific information regarding custody of the samples projected to be collected on the weekend will be noted in the field logbook.

The chain of custody record should include (at minimum) the following:

1. Sample identification number.
2. Sample information.
3. Sample location.
4. Sample date.
5. Name(s) and signature(s) of sampler(s).
6. Signature(s) of any individual(s) with control over samples.

CUSTODY SEALS

Custody seals demonstrate that a sample container has not been tampered with, or opened. The individual in possession of the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the sample packaging, will be noted in the field logbook.

4.3.2 Sampling SOPs

SOIL SAMPLING

Soil sampling activities will be conducted in accordance with guidelines outlined in EPA/ERT Soil Sampling SOP #2012 (Attachment B).

4.3.3 Sample Handling and Shipment

Each of the sample bottles will be sealed and labeled according to the following protocol. Caps will be secured with custody seals. Bottle labels will contain all required information including site/project code and sample number, time and date of collection, analyses requested, and preservative used. Sealed bottles will be placed in large metal or plastic coolers, and padded with an absorbent material such as vermiculite. All packaging will conform to IATA Transportation regulations for overnight carriers.

All sample documents will be affixed to the underside of each cooler lid. The lid will be sealed and affixed on at least two sides with custody seals so that any sign of tampering is easily visible.

4.4 Analytical Methods

Analytical methods to be utilized in the analyses of samples collected during this sampling event are detailed in Table 3.

4.5 Schedule of Activities

Proposed Start Date	Activity	End Date
April 17, 1997	Soil Sampling	April 17, 1997

4.6 Disposal of PPE and Investigative Derived Wastes

To the extent possible, all PPE and sampling materials will be decontaminated on site, double bagged and disposed of in an approved manner.

5.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The EPA OSC, Eric Wilson, will provide overall direction to the staff concerning project sampling needs, objectives, and schedule. The Project Manager (PM), Mike Mahnkopf, will be the primary point of contact with the OSC. The PM is responsible for the development and completion of the Sampling QA/QC Plan, project team organization, and supervision of all project tasks, including reporting and deliverables. The Site QC Coordinator will be responsible for ensuring field adherence to the Sampling QA/QC Plan and recording of any deviations. The START Analytical Services Coordinator, Smita Sumbaly, will be the primary project team site contact with the subcontracted laboratory, if necessary.

The START will arrange for the laboratory analyses. START personnel will transfer custody of the soil samples for shipment to the appropriate laboratory. The raw analytical data from the laboratory will be provided to the START Analytical Services Group for data validation.

The following sampling personnel will work on this project:

<u>Personnel</u>	<u>Responsibility</u>
Christoff Stannik Dave Adams	Field Coordinator, Site QA/QC Site Sampling

The following laboratories will provide the following analyses:

<u>Lab Name/Location</u>	<u>Sample Type</u>	<u>Parameters</u>
To be determined	Soil	PCB Metals

A standard turnaround time of three weeks for written and two weeks for verbal results will be requested.

6.0 QA REQUIREMENTS

The following requirements apply to the respective QA Objectives and parameters identified in Section 3.0. The QA Protocols for a Level 2 QA objective sampling event are applicable to all sample matrices and include:

1. Sample documentation in the form of field logbooks, appropriate field data sheets, and chain of custody records (chain of custody records are optional for field screening locations);
2. Calibration of all monitoring and/or field-portable analytical equipment prior to collection and analyses of samples with results and/or performance check procedures/methods summarized and documented in a field, personal, and/or instrument log notebook;
3. Field or laboratory determined method detection limits (MDLs) will be recorded

along with corresponding analytical sample results, where appropriate;

4. Analytical holding times as determined from the time of sample collection through analysis. These will be documented in the field logbook or by the laboratory in the final data deliverable package;
5. Initial and continuous instrument calibration data;
6. QC blank results (rinsate, trip, method, preparation, instrument, etc.), as applicable;
7. Collection and analysis of blind field duplicate and MS/MSD QC samples to provide a quantitative measure of the analytical precision and accuracy, as applicable; and
8. Use of the following QC procedure for QC analyses and data validation:
 - Definitive identification - confirm the identification of analytes on 10% of the screened (field or laboratory) or 100% of the unscreened samples, via an EPA-approved method; provide documentation such as gas chromatograms, mass spectra, etc.

7.0 DELIVERABLES

The START PM, Mike Mahnkopf, will maintain contact with the EPA OSC, Eric Wilson, to keep him informed about the technical and financial progress of this project. This communication will commence with the issuance of the work assignment and project scoping meeting. Activities under this project will be reported in status and trip reports and other deliverables (e.g., analytical reports, final reports) described herein. Activities will also be summarized in appropriate format for inclusion in monthly and annual reports.

The following deliverables will be provided under this project:

TRIP REPORT

A trip report will be prepared to provide a detailed accounting of what occurred during each sampling mobilization. The trip report will be prepared within one week of the last day of each sampling mobilization. Information will be provided on time of major events, dates, and personnel on site (including affiliations).

MAPS/FIGURES

Maps depicting site layout, contaminant source areas, and sample locations will be included in the

trip report, as appropriate.

ANALYTICAL REPORT

An analytical report will be prepared for samples analyzed under this plan. Information regarding the analytical methods or procedures employed, sample results, QA/QC results, chain of custody documentation, laboratory correspondence, and raw data will be provided within this deliverable.

DATA REVIEW

A review of the data generated under this plan will be undertaken. The assessment of data acceptability or useability will be provided separately, or as part of the analytical report.

8.0 DATA VALIDATION

Data generated under this QA/QC Sampling Plan will be evaluated according to criteria contained in the Removal Program Data Validation Procedures that accompany OSWER Directive number 9360.4-1.

Laboratory analytical results will be assessed by the data reviewer for compliance with required precision, accuracy, completeness, representativeness, and sensitivity.

9.0 SYSTEM AUDIT

The Field QA/QC Officer will observe sampling operations and review subsequent analytical results to ensure compliance with the QA/QC requirements of the project/sampling event.

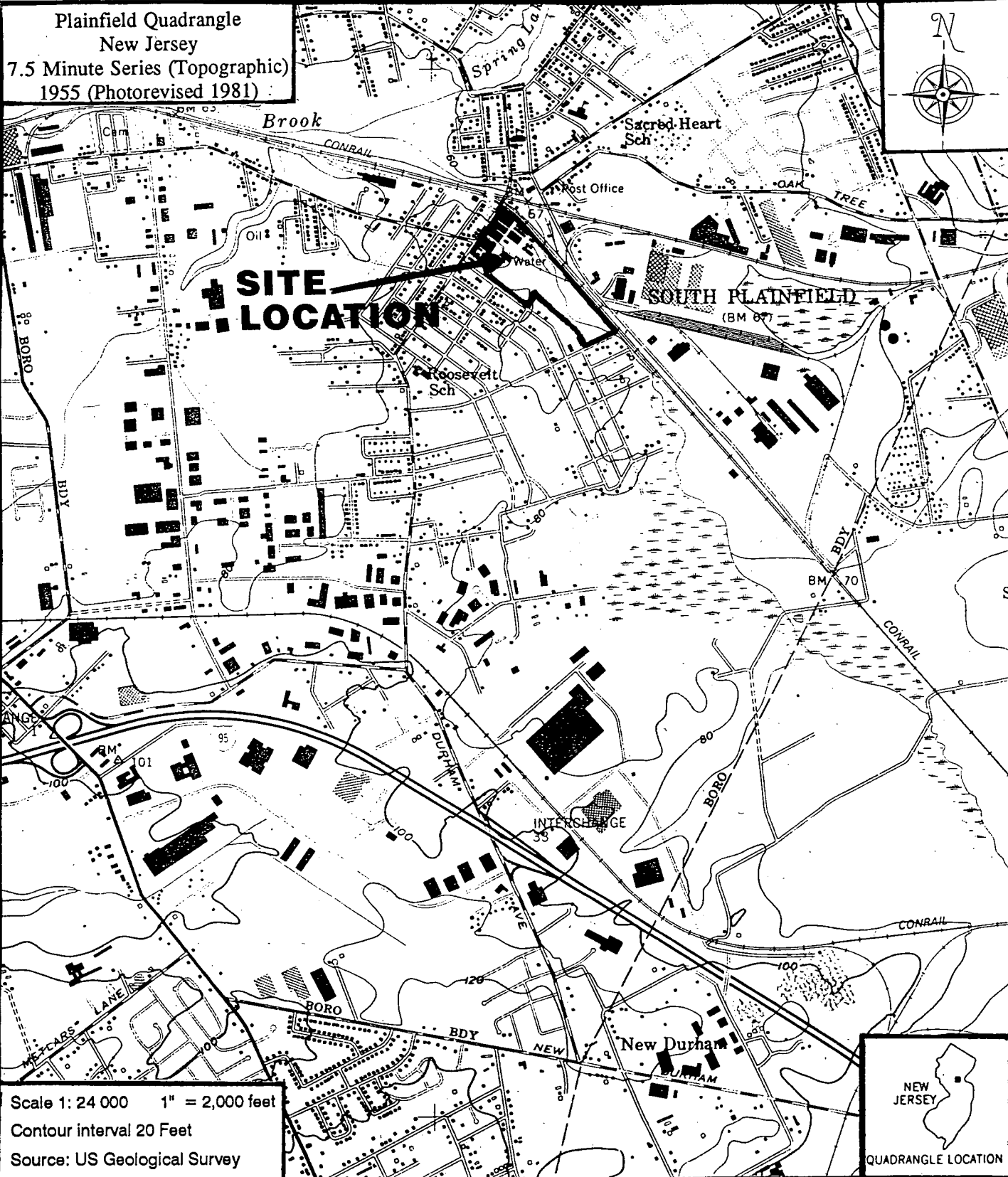
10.0 CORRECTIVE ACTION

All provisions will be taken in the field and laboratory to ensure that any problems that may develop will be dealt with as quickly as possible to ensure the continuity of the project/sampling events. Any deviations from this sampling plan will be noted in the final report.

ATTACHMENT A

SITE MAPS

Plainfield Quadrangle
New Jersey
7.5 Minute Series (Topographic)
1955 (Photorevised 1981)



Scale 1: 24 000 1" = 2,000 feet
Contour interval 20 Feet
Source: US Geological Survey



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Figure 1:
Site Location Map

ATTACHMENT B
SOIL SAMPLING SOP #2012

2.0 SOIL SAMPLING: SOP #2012

2.1 SCOPE AND APPLICATION

The purpose of this Standard Operating Procedure (SOP) is to describe the procedures for collecting representative soil samples. Analysis of soil samples may determine whether concentrations of specific soil pollutants exceed established action levels, or if the concentrations of soil pollutants present a risk to public health, welfare, or the environment.

2.2 METHOD SUMMARY

Soil samples may be collected using a variety of methods and equipment. The methods and equipment used are dependent on the depth of the desired sample, the type of sample required (disturbed versus undisturbed), and the type of soil. Near-surface soils may be easily sampled using a spade, trowel, and scoop. Sampling at greater depths may be performed using a hand auger, a trier, a split-spoon, or, if required, a backhoe.

2.3 SAMPLE PRESERVATION, CONTAINERS, HANDLING, AND STORAGE

Chemical preservation of solids is not generally recommended. Refrigeration to 4°C, supplemented by a minimal holding time, is usually the best approach.

2.4 INTERFERENCES AND POTENTIAL PROBLEMS

There are two primary interferences or potential problems associated with soil sampling. These include cross-contamination of samples and improper sample collection. Cross-contamination problems can be eliminated or minimized through the use of dedicated sampling equipment. If this is not possible or practical, then decontamination of sampling equipment is necessary. Improper sample collection can involve using contaminated equipment, disturbance of the matrix resulting in compaction of the sample, or inadequate homogenization of the samples where required,

resulting in variable, non-representative results.

2.5 EQUIPMENT/APPARATUS

- sampling plan
- maps/plot plan
- safety equipment, as specified in the health and safety plan
- compass
- tape measure
- survey stakes or flags
- camera and film
- stainless steel, plastic, or other appropriate homogenization bucket or bowl
- 1-quart mason jars w/Teflon liners
- Ziploc plastic bags
- logbook
- labels
- chain of custody forms and seals
- field data sheets
- cooler(s)
- ice
- decontamination supplies/equipment
- canvas or plastic sheet
- spade or shovel
- spatula
- scoop
- plastic or stainless steel spoons
- trowel
- continuous flight (screw) auger
- bucket auger
- post hole auger
- extension rods
- T-handle
- sampling trier
- thin-wall tube sampler
- Vehimeyer soil sampler outfit
 - tubes
 - points
 - drive head
 - drop hammer
 - puller jack and grip
- backhoe

2.6 REAGENTS

Reagents are not used for the preservation of soil samples. Decontamination solutions are specified in

sample recovery since they provide a large volume of sample in a short time. When continuous flight augers are used, the sample can be collected directly from the flights, which are usually at 5-foot intervals. The continuous flight augers are satisfactory for use when a composite of the complete soil column is desired. Posthole augers have limited utility for sample collection as they are designed to cut through fibrous, rooted, swampy soil.

Follow these procedures for collecting soil samples with the auger and a thin-wall tube sampler.

1. Attach the auger bit to a drill rod extension, and attach the "T" handle to the drill rod.
2. Clear the area to be sampled of any surface debris (e.g., twigs, rocks, litter). It may be advisable to remove the first 3 to 6 inches of surface soil for an area approximately 6 inches in radius around the drilling location.
3. Begin augering, periodically removing and depositing accumulated soils onto a plastic sheet spread near the hole. This prevents accidental brushing of loose material back down the borehole when removing the auger or adding drill rods. It also facilitates refilling the hole, and avoids possible contamination of the surrounding area.
4. After reaching the desired depth, slowly and carefully remove the auger from boring. When sampling directly from the auger, collect sample after the auger is removed from boring and proceed to Step 10.
5. Remove auger tip from drill rods and replace with a pre-cleaned thin-wall tube sampler. Install proper cutting tip.
6. Carefully lower the tube sampler down the borehole. Gradually force the tube sampler into the soil. Care should be taken to avoid scraping the borehole sides. Avoid hammering the drill rods to facilitate coring as the vibrations may cause the boring walls to collapse.
7. Remove the tube sampler, and unscrew the drill rods.
8. Remove the cutting tip and the core from the device.
9. Discard the top of the core (approximately 1 inch), as this represents material collected before penetration of the layer of concern. Place the remaining core into the appropriate labeled sample container(s). Sample homogenization is not required.
10. If volatile organic analysis is to be performed, transfer a portion of the sample directly into an appropriate, labeled sample container(s) with a stainless steel lab spoon, plastic lab spoon, or equivalent and secure the cap(s) tightly. Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into an appropriate, labeled container(s) and secure the cap(s) tightly; or, if composite samples are to be collected, place a sample from another sampling interval into the homogenization container and mix thoroughly. When compositing is complete, place the sample into the appropriate, labeled container(s) and secure the cap(s) tightly.
11. If another sample is to be collected in the same hole, but at a greater depth, reattach the auger bit to the drill and assembly, and follow steps 3 through 11, making sure to decontaminate the auger and tube sampler between samples.
12. Abandon the hole according to applicable state regulations. Generally, shallow holes can simply be backfilled with the removed soil material.

Sampling at Depth with a Trier

The system consists of a trier, and a "T" handle. The auger is driven into the soil to be sampled and used to extract a core sample from the appropriate depth.

Follow these procedures to collect soil samples with a sampling trier.

1. Insert the trier (Appendix A, Figure 2) into the material to be sampled at a 0° to 45° angle from horizontal. This orientation minimizes the spillage of sample.
2. Rotate the trier once or twice to cut a core of material.

to remove any soil that may have fallen from above, and to expose fresh soil for sampling. In many instances, samples can be collected directly from the backhoe bucket.

5. If volatile organic analysis is to be performed, transfer a portion of the sample directly into an appropriate, labeled sample container(s) with a stainless steel lab spoon, plastic lab spoon, or equivalent and secure the cap(s) tightly. Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into an appropriate, labeled container(s) and secure the cap(s) tightly; or, if composite samples are to be collected, place a sample from another sampling interval into the homogenization container and mix thoroughly. When compositing is complete, place the sample into appropriate, labeled container(s) and secure the cap(s) tightly.
6. Abandon the pit or excavation according to applicable state regulations. Generally, shallow excavations can simply be backfilled with the removed soil material.

2.8 CALCULATIONS

This section is not applicable to this SOP.

2.9 QUALITY ASSURANCE/ QUALITY CONTROL

There are no specific quality assurance activities which apply to the implementation of these procedures. However, the following QA procedures apply:

- All data must be documented on field data sheets or within site logbooks.
- All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan. Equipment checkout and calibration activities must occur prior to sampling/operation, and they must be documented.

2.10 DATA VALIDATION

This section is not applicable to this SOP.

2.11 HEALTH AND SAFETY

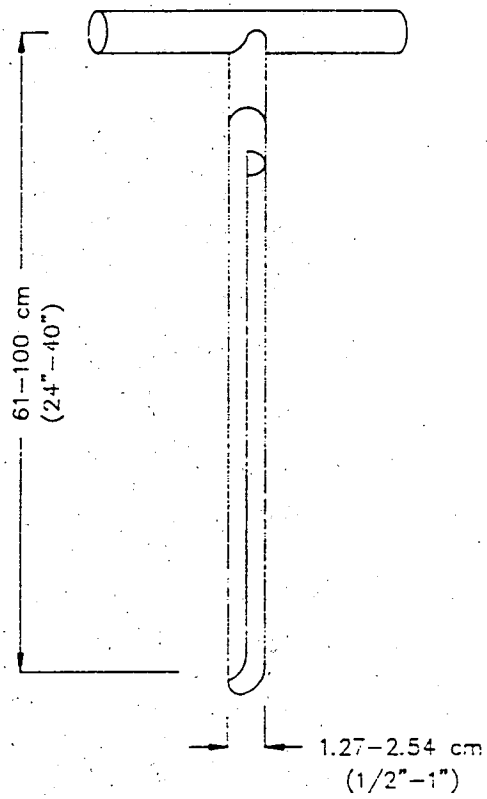
When working with potentially hazardous materials, follow U.S. EPA, OSHA, and specific health and safety procedures.

APPENDIX A

Figures

Figure 2: Sampling Trier

SOP #2012





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SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019

April 14, 1997

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U.S. Environmental Protection Agency
Removal Action Branch
2890 Woodbridge Avenue
Edison, NJ 08837

EPA CONTRACT NO: 68-W5-0019
TDD NO: 02-97-02-0015B
DOCUMENT CONTROL NO: START-02-F-00962
SUBJECT: SAMPLING QA/QC WORK PLAN -Cornell Dubilier Electronics Site

Dear Mr. Wilson:

Enclosed please find the Sampling QA/QC Work Plan for the Cornell Dubilier Electronics Site located in S. Plainfield, New Jersey.

If you have any questions, do not hesitate to call me at (908) 225-6116.

Very truly yours,

ROY F. WESTON, INC.

Joseph M. Soroka

Enclosure

cc: TDD File
M. Mahnkopf, PM

